



Comment Responses

Exposure Pathway Analysis and Risk Assessment for the HOD Landfill Final End Use Plan

The following are responses to the comments that were received from the USEPA on the draft report entitled "Exposure Pathway Analysis and Risk Screening for the HOD Landfill" dated July 2002. The USEPA's comments were provided orally during a September 4, 2002, conference call among Tom Bloom and Andrew Podowski (EPA Region 5), Larry Buechel (Waste Management), and Mark Torresani and Mary Swanson (RMT).

(It should be noted that the report has been reorganized in the revision process. Section numbers from the July 2002 draft are listed in the comments, and current section numbers are provided in the responses. Also note that the title has been revised to "Exposure Pathway Analysis and Risk Assessment for the HOD Landfill Final End Use Plan".)

1. *Add further discussion to Section 3 as to why we are not addressing groundwater, that is, why it is not now of concern (reasons such as a new municipal well was installed, the old well has been closed, quarterly monitoring is underway, institutional controls have been implemented to prevent use of contaminated groundwater, etc.).*

Response: The following was added to the text in Subsection 2.1:

"Potential risks associated with exposure to groundwater affected by the landfill were evaluated as part of the 1994 baseline risk assessment (BLRA). It is not necessary to re-evaluate this exposure pathway because there are no complete exposure pathways for groundwater under current site conditions and because use of potentially site-impacted groundwater is not part of the proposed redevelopment plans for the landfill. Moreover, institutional controls are in place to prevent the use of contaminated groundwater. Routine groundwater monitoring is being conducted to identify changes in groundwater flow or quality that affect the status of this exposure pathway."

2. *Incorporate applicable Risk Assessment Guidance for Superfund (RAGS) Part D tables (EPA, 2001).*

Response: Based on a review of the RAGS Part D tables and guidance, the following tables have been added to the final end use plan risk assessment:

- RAGS Table 0: Site Risk Assessment Identification Information (Table 1 in the final end use plan risk assessment)

- RAGS Table 1: Selection of Human Exposure Pathways (Table 2 in the final end use plan risk assessment)
- RAGS Table 2.1: Occurrence, Distribution, and Evaluation of Chemicals Selected for Risk Screening (presented in three separate tables for soil, surface water, and sediment; Tables 5, 6, and 7, respectively, in the final end use plan risk assessment)

3. *Add a summary of the baseline risk assessment results to Section 1.*

Response: A summary of the BLRA completed in 1994 has been added to Subsection 1.2 of the Exposure Pathway Analysis and Risk Assessment for the HOD Landfill Final End Use Plan.

4. *With respect to evaluating data trends, refer to the upcoming annual report for quarterly monitoring. Two quarterly rounds are not enough to assess.*

Response: A reference to the upcoming annual report was added to Subsection 3.2.

5. *If any chemicals do not meet human health screening criteria, then calculate risk using site-specific exposure values. In this case, accidental exposure and/or acute toxicity may be applicable and should be considered.*

Response: For surface water and sediment, the chemicals that could be evaluated were found either to be of no concern in the BLRA or to be below the available human health screening criteria. No applicable screening criteria were available for lead or 2-hexanone in surface water, and these were also toxicity data gaps in the BLRA. Lead was detected in Sequoit Creek surface water during the 1994 RI, but was not detected in the first three quarters of 2002 monitoring. Exposure to lead from contact with the creek water would be negligible because the form of lead in the environment does not absorb through the skin. The only form of lead that easily absorbs through skin is that found in leaded gasoline (ATSDR, 1997). No established toxicity values for dermal exposure to 2-hexanone are available. This compound was detected at a low level in one out of six samples in the 1994 RI, and was not detected in the first three quarters of monitoring (RMT, 2002a, b, and c).

No complete exposure pathways are expected for groundwater or leachate.

For surface soil, the only chemical exceeding a screening toxicity value is beryllium. However, the measured site surface soil concentrations at 0.5 to 0.7 mg/kg are less than the background average concentrations for a variety of soil types (1.2 to 2.1 mg/kg, from Kabata-Pendias and Pendias [1985]).

The following are responses to comments that were received from USEPA's contractor, E2 Inc., on the draft report entitled "Exposure Pathway Analysis and Risk Screening for the HOD Landfill" dated July 2002. These comments were received on September 26, 2002, via e-mail.

HOD Risk Assessment Issues for Recreational Uses

General Comments

The revised risk assessment for the HOD Landfill site will be the basis upon which critical site reuse actions will be based. As such it is of utmost importance that the risk assessment be structured to provide adequate support for those actions. Specifically, the risk assessment must:

- *Sufficiently communicate the sites safety for the recreational uses envisioned*
- *Support the removal of the fence surrounding the site*
- *Support the issuance of a Certificate of Availability for Reuse*

Response: Comment noted.

Executive Summary

1. *The ES should start with a clear statement of the purpose (assessing risk for recreational uses) and whether the purpose was satisfied (it is or is not safe), and what assumptions made this possible.*

Response: The executive summary was revised to more clearly state the purpose, results, and bases for the results.

2. *We need to add results to get a full picture of site safety; how far are we from completing all the analysis?*

Response: Completed analyses of potential exposure and risk are presented in the current revision of the Exposure Pathway Analysis and Risk Assessment for the HOD Landfill Final End Use Plan.

Section 1 - Objectives and Background

3. *The following sentence, taken from page 1, describes the purpose: "The purpose of this exposure analysis and screening-level risk assessment was to assess potential human health and environmental exposures and risks associated with proposed future site uses under current (remediated) site conditions. This is intended to assist Waste Management of Illinois, Inc. (WMII), and the United States Environmental Protection Agency (USEPA) to determine if the proposed site uses are acceptable in terms of human*

health and environmental risk." This purpose is never addressed else where in the document, but would serve reuse and certification very well.

Response: The purpose was restated in Section 5 of the text, "Conclusions and Recommendations."

4. *You state that the risk evaluation relies on the 1994 baseline risk assessment; would it be possible to put in a couple of lines as to why the initial baseline risk assessment is still reflective of the site, and why its findings are reliable/transferable?*

Response: Additional information regarding the applicability of the BLRA results to current conditions has been added to Subsection 3.3.

Section 2 - Constituents of Potential Concern

5. *Vinyl chloride is listed as being a new contaminant of potential concern (COPC), and the report presents detected levels; since the levels are listed, can we state whether or not they exceed MCLs?*

Response: The detected concentration of vinyl chloride in surface water (0.26 mg/L) does not exceed the Maximum Contaminant Level (MCL) for vinyl chloride of 2 mg/L. However, MCLs have been established by the USEPA under the Safe Drinking Water Act for the management of public (and some types of private) potable water systems and are not applicable to surface water in Sequoit Creek. An applicable human health-based screening value of 54 mg/L was added to Table 5 for skin contact exposure from wading in the creek. This value was determined for a target risk of 1×10^{-6} from the Risk Assessment Information System (RAIS) Web site (ORNL, 2002).

6. *The report does a good job of explaining why all of the COPCs were carried through; it just doesn't state how. For example, did it rely upon the samples taken in 1994, then apply the new standards, or did it use new samples and new standards?*

Response: The approach used to evaluate the COPCs was clarified in Subsection 3.1 and Table 3. In general, sample data from 1994 and 2002 were compared with current standards. RAGS Part D tables were added with further details describing the selection and screening process (Tables 5, 6, and 7 of the final end use plan risk assessment).

7. *It is not clear if Vinyl Chloride was found just once or if it has been detected more than once.*

Response: Vinyl chloride was detected in one surface water sample (SW-02) and its field duplicate in the February round of 2002 quarterly monitoring. This has been clarified in Table 5.

Section 3 - Exposure Assessment

8. *How does not calculating dose rates from intake models affect this reuse assessment? Does it make it more or less viable? Why wasn't it done? Could this be explained in language that the average person would understand? What does "dose rates from intake models" mean?*

Response: "Not calculating dose rates from intake models" means that quantitative estimates of risk based on site-specific exposure models were not calculated for this evaluation.

The approach taken in the Exposure Pathway Analysis and Risk Assessment for the HOD Landfill Final End Use Plan, for any potentially complete exposure pathways, was to evaluate the residual risk for that pathway in one of the following two ways:

- Perform a screening-level risk assessment by comparing site data with relevant federal, state, or other risk-based criteria.
- Demonstrate that the risk was addressed in the BLRA completed for the site.

Then, if any chemicals were present at levels that indicate a potential concern based on the two steps listed above, a more detailed and site-specific quantitative risk assessment for those chemicals would be warranted. As it turns out, there are no chemicals of concern remaining after the screening process.

The discussion of the above-described approach has been revised in Subsection 3.1 to make it more understandable.

9. *The statement, "The exposure assessment was based on the assumption that the existing site remedy would not be compromised by site redevelopment activities" is an important one; it should show up in the Executive Summary and Conclusions.*

Response: A statement to the above effect has been added to the Executive Summary and to Section 5, "Conclusions and Recommendations."

10. *Section 3.1 states that "Contact with groundwater or leachate was not expected under any of the proposed end uses." We should restate why groundwater is not an issue, and discuss why leachate isn't.*

Response: Further discussion has been added to Subsection 2.1 explaining why groundwater and leachate exposure are not expected for the proposed site uses.

11. *Is there any scientific basis for proving that the various recreational user groups have the same exposure potential?*

Response: Various recreational groups would not have the same exposure potential. However, our analysis is conservative for a variety of recreational uses because site concentrations are compared with screening levels established for exposures higher than those expected for any recreational group (*i.e.*, IEPA soil screening values for a residential scenario).

In addition, the BLRA results for soil (with a total estimated risk of 9×10^{-9}) were more than 100 times below the 1×10^{-6} risk level of concern. Developing further site- and activity-specific exposure assumptions for recreational users is not necessary, given the screening results, the previous BLRA results, and the lack of exposure pathways.

12. *If the risk assessment is being done for recreational users, does it assume the fence has been removed?*

Response: The risk assessment for recreational users assumes free access to the area. However, the fence may remain in place. This was clarified by adding the following text to Subsection 2.1: "The exposure pathway analysis also assumes that the general public would have free access to the site, whether the perimeter fence is removed or remains in place, with the exception of the small fenced-in area containing the active remediation system."

13. *When discussing the inhalation of airborne COPCs from the landfill, the report alludes to the 1994 baseline risk assessment that looked at "Exposure to fugitive LFG emissions... for nearby residents using modeled air concentrations for off-site locations." Will this be different for on-site users? If not, why?*

Response: Exposure to fugitive LFG emissions would be different for on-site users because exposure times would be greater for a resident living near the site than for an on-site recreational user. Concentrations would also differ for on-site and off-site exposures. While on-site recreational users would be closer to the landfill, the exposure concentrations would not necessarily be higher owing to the nature of potential vapor migration. Air concentrations for potential off-site exposures were estimated for the BLRA based on transport modeling of fugitive LFG emissions without a landfill gas extraction/treatment system in place. The risks posed by these simulated concentrations were below levels of concern. Fugitive emissions of LFG are not expected under the existing site remedy because the gas/leachate extraction system maintains negative pressure throughout the landfill, drawing LFG to the flare rather than allowing the LFG to discharge directly to the atmosphere.

14. *Section 3.2 discusses Ecological Exposures; is it possible that burrowing animals could impact the remedy? If so, how would this potentially affect exposure scenarios?*

Response: It is possible that burrowing animals could dig into the cover soil, but the impact is expected to be minimal. Continued inspections and maintenance, along with use of the site, will further decrease the likelihood of this impact.

Section 4 - Risk Characterization

15. *The case is made that a recreational user is the equivalent of a trespasser. We would like to address the following issues:*

A. *Are the exposure data stated on the top of page 9 the same exposure data as used in the previous risk assessment or are they just similar? Where do these numbers come from? Is there a set of standards?*

Response: The exposure data stated on the top of page 9 (in the July 2002 report) are the exposure data that were used in the BLRA for an on-site trespasser. The rationale for using these values for an on-site recreational user has been added to the revised report in Subsection 3.3.

B. *Is there scientific evidence that a recreational user and trespasser will have similar exposures? A back of the envelope calculation would place a recreational soccer user at the site over 60 days a year, rather than the estimated 43 (18 weeks of soccer - 2 days a week for practice, one day a week for games). Also, the 1994 risk BLRA states that the soil ingestion is likely to be reduced for trespassers in the winter; for children playing under a recreational situation, might this be different?*

Response: A trespassing scenario was evaluated for exposure to surface soil in the BLRA. The BLRA results for soil (with a total estimated risk of 9×10^{-9}) were more than 100 times below the 1×10^{-6} risk level of concern. Even if recreational use occurred throughout the year, on more than the 43 days per year assumed for trespassing, exposure and risk are not expected to increase by a factor of 100.

Under current site conditions, the potential exposure to site-related chemicals in soil is significantly reduced below that evaluated in the BLRA, because the localized areas of contaminated surface soil have been covered with clean fill as part of the remedial action. Nevertheless, in order to address concerns about unforeseen or accidental exposure to soil contaminants, soil chemical concentration screening compared soil concentrations with Illinois Tier 1 residential screening levels for surface soil (IEPA, 1996). The residential scenario screening levels are more protective of health than needed for a recreational scenario, and the only chemical that exceeds a screening level is beryllium, which is naturally occurring and not distinguishable from background levels. Even if recreational use occurred throughout the year on more than the 43 days

per year assumed for trespassing, it is still not expected to exceed the 350 days per year used in the development of residential screening values.

- C. *Does equating a recreational user with a trespasser assume that the fence has been taken down? If so, we should state that, and the risk assessment will have proven that it is safe to take the fence down.*

Response: As stated in Subsection 2.1, equating a recreational user with a trespasser assumes free access to the area, whether the perimeter fence is removed or remains in place.

- D. *Surface water and creek sediment (both dermal contact and ingestion) are the pathways of exposure for trespassers/recreational users. Since the recreational uses would not involve playing in the creek, is this relevant? Can it be assumed that a trespasser going into the stream will suffer the same exposures as a recreational player outside the stream?*

Response: Contact with the creek is evaluated in Subsections 3.3 and 3.4 as a possible unplanned activity at the site. This is considered relevant, given general use of the area if it is developed for recreational use. Wading or playing in the stream is the only activity where exposure to site-related chemicals in the surface water and sediment is expected—a recreational user outside the stream would not come in contact with either surface water or sediment.

- E. *The 1994 risk assessment discusses contaminated on-site surface soils as being a pathway of exposure (ingestion and dermal absorption), as were sediments and surface water. Why was it not included?*

Response: The surface soil pathway has been added to the evaluation in Subsections 3.3 and 3.4.

- F. *The 1994 risk assessment states that on-site workers exposures will be less than trespassers. Should this be mentioned in the document to avoid worker concerns?*

Response: A statement to the effect that “Based on the chemical risk screening comparability to background, and BLRA results, risks to on-site maintenance workers are of no concern” has been added to Subsection 3.4.

Section 5 - Uncertainty Analysis

16. *It should be mentioned, if it is true, that there is uncertainty in equating trespassers with recreational users.*

Response: Uncertainty in equating trespassers with recreational users has been added to Section 4, "Uncertainty Analysis."

17. *The section is called "Uncertainty Analysis," but really, there is no analysis, just a bulleted list of variables that make the risk assessment uncertain.*

Response: More discussion has been added to Section 4 with respect to uncertainties and their possible effects on the risk assessment.

18. *Should we state what variables have the largest potential to impact the results of the reuse assessment?*

Response: The following has been added near the end of Section 4:

"Also note that the exposure and risk assessment are based on the assumption that any site development will maintain the integrity and operation of the remedy. This assumption has the largest potential to impact the results of this risk assessment."

Section 6 - Conclusions and Recommendations

19. *In the second paragraph, the report states, "An evaluation of alternative end uses and designs with respect to compatibility with the existing remedy and maintaining integrity of the existing remedy is recommended." This presents a bit of a chicken-egg issue. The stakeholders will need a risk assessment that states what the site can safely support before moving forward with more concrete plans.*

Response: Specific design plans should factor in requirements and/or limitations to ensure that the remedy will not be compromised. More detailed general recommendations have been added to the Executive Summary and Section 5, "Conclusions and Recommendations."

20. *There is no mention of taking down the fence.*

Response: Free site access is assumed, and this was clarified in Subsection 2.1.

21. *The purpose, stated in Section 1 and highlighted in this recommendation, has not been satisfied or clearly addressed. The report should state, at the latest in the conclusions, that the remedy is protective of the proposed reuse. This will be invaluable in developing a certificate that certifies the property as available for reuse; EPA will rely on EPA documents to provide rational for such certifications.*

Response: A statement indicating that the existing remedy is protective of proposed reuse was added to the conclusions in Section 5.

Tables

22. *I am a little confused by the statement on the cover sheet for the RAGS Part D planning tables; it states, "The Planning Table may not be altered... as appropriate to reflect site-specific conditions." Can they, or can they not be changed?*

Response: We agree that the guidance is unclear on this point. Renumbering and other minor modifications to the tables have been made for clarity in presenting the relevant information related to this risk assessment.

23. *When will the vinyl chloride information be provided? Is there any indication that it presents a risk?*

Response: The vinyl chloride information has been added to Table 6 of the revised report. Vinyl chloride does not present a risk at the low concentrations measured in surface water. The detected concentration of vinyl chloride in surface water (0.26 mg/L) does not exceed the applicable human health-based screening value of 54 mg/L for skin contact exposure from wading in the creek. This value was determined for a target risk of 1×10^{-6} from the Risk Assessment Information System (RAIS) Web site (ORNL, 2002) and was added to Table 5.

24. *I thought the tables made more sense the way you had broken them down, but I am unfamiliar with the protocol.*

Response: In response to the USEPA's comments, some of the RAGS Part D tables have been incorporated into the revised document. Based on a review of the RAGS Part D tables and guidance, the following tables have been added to the report:

- RAGS Table 0: Site Risk Assessment Identification Information (Table 1 in the final end use plan risk assessment)
- RAGS Table 1: Selection of Human Exposure Pathways (Table 2 in the final end use plan risk assessment)
- RAGS Table 2.1: Occurrence, Distribution, and Evaluation of Chemicals Selected for Risk Screening (presented in three separate tables for soil, surface water, and sediment; Tables 5, 6, and 7, respectively, in the final end use plan risk assessment)

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1997. Toxicological profile for lead. U.S. Department of Health and Human Services, Public Health Service. July 1999. <http://www.atsdr.cdc.gov/toxprofiles/tp13.html>. December 2, 2002.

Illinois Environmental Protection Agency. 1996. Tiered approach to cleanup objectives guidance document. Bureau of Land.

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Oak Ridge National Laboratory (ORNL). 2002. Risk assessment information system (RAIS). http://risk.lsd.ornl.gov/prg/prg_document.shtml. November 7, 2002.

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RMT, Inc. 2002b. Operations, maintenance, and monitoring progress report No. 2.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

DATE: January 22, 2003

SUBJECT: Review of, Comment Responses Exposure Pathway Analysis and Risk Assessment for the HOD Landfill Final End Use Plan, and Exposure Pathway Analysis and Risk Assessment for the HOD Landfill Final End Use Plan, December 2002.

FROM: Andrew Podowski
Toxicologist
Remedial Response Section #5

TO: Tom Bloom
Remedial Project Manager
Remedial Response Section #5

I have the following comments for Comment Responses Exposure Pathway Analysis and Risk Assessment for the HOD Landfill Final End Use Plan.

1. In the Response it states:Routine groundwater monitoring is being conducted to identify changes in groundwater flow or quality that affect the status of this exposure pathway. I think it would be helpful for the purpose of alleviating public fears, just how often is groundwater being tested, for example by the municipality to meet ODW standards, to prevent a lag time from the moment that contamination might occur to the moment that the public is alerted to the problem.

I realize that containment and redevelopment of the site is a separate issue from groundwater impacting the public water supply. However, this is a lingering issue that is not unrelated to the site. That is why the more explanations and assurances that can be provided to the public that they are safe and the reasons why they are safe, the greater the chances that they will accept redevelopment.

If no screening criteria are available for surface water, then they should be developed based on best available information and assumptions, or calculate the risk using site specific exposure values i.e., accidental exposure and/or acute toxicity.

It is stated that, no established toxicity values for dermal exposure to 2-hexanone are available.

But it is not unusual to extrapolate oral toxicity values to dermal toxicity values, if necessary, to evaluate this pathway.

integrity of remedy

Mark Torresani

LA TINC.

(CW)

JK

ODW is exposed in fact sheet. show way to calculate lag time. no possibility for it to occur

explain

?

?

showy conf.
P4150.

prodesign act 2/01/03
rearrange. start
Forward New Act/Mgt 40k

It is stated that, no complete exposure pathways are expected for groundwater or leachate. If this is true, please provide brief statement as to why this is true. ^{show where it is explained} OK

Is groundwater and leachate containment so efficient that no possibility of exposure exists, even under accidental conditions? As I recall, mention was made of some leachate being seen along the slopes of the landfill.

For beryllium, a comparison to local background should be made, rather than to generic numbers that may have little or no relationship to local soil types.

Also, the mere fact that beryllium may pose a risk, even though it may be at background concentrations, is an incidental piece of information that ordinarily the public should be aware of. This is so because such contaminants are known as background COCs and can often influence the Total Risk at a site, together with true site-related contaminants. That is why it's important to determine and identify which COCs are background-related and which ones are site-related, for purposes of determining Total Risk to receptors and for purposes of determining which COCs must be cleaned up at a site to reduce Total Risk to acceptable levels. Therefore, please qualify footnote (7) in Table 6.

Page 3 No. 3. The use of the word (remediated) is probably inappropriate for this site, since it implies that contaminants have been removed and/or completely contained and there is no risk. A more appropriate word or words may be (remedial monitoring).

Page 4 No. 5. This paragraph must be revised in view of the fact that MCL for vinyl chloride is in fact 0.002 mg/L, not 2 mg/L. Thus, the surface water concentration of 0.26 mg/L does exceed the MCL by about 2 orders of magnitude. Therefore, an explanation is required as to what the risk implications are for potential receptors accidentally ingesting contaminated surface water and sediment. Or, check the Units used.

In addition, the screening value of 54 mg/L in Table 6 for skin contact exposure from wading in the creek, derived for a target risk of 1×10^{-6} , is not clear or transparent in its derivation. One important purpose of RAGS Part D Tables is to make the assessment clear and transparent to the reader and reviewer alike. Therefore, please clarify the derivation of this value, on a separate worksheet as RAGS Part D calls for.

Also, for trichloroethylene in view of the fact that TCE toxicity values have changed and are currently being finalized. See website

<http://cfpub.epa.gov/ncea/cfm/recorddisplay.cfm?deid=23249> and see Region 9 most recent PRG screening values.

I have the following comments for Exposure Pathway Analysis and Risk Assessment for the HOD Landfill Final End Use Plan, December 2002.

Instead of stating in the footnote that Table 1 is based on Table 0 of USEPA (2001) guidance, why not change Table 1 to Table 0 and simply leave the footnote as is to indicate and refer the reader and reviewer to USEPA's (2001) guidance for further clarification of this Table, if necessary.
Do same with subsequent Tables, as appropriate.

renumber
Tables

In Table 2 the Rationale column for Inhalation states thatCurrent on-site air data are not available, however, concentrations are expected to be very low. It may be true that concentrations are very low, but it makes me uncomfortable as a risk assessor to see such statements. That is, just because we believe that something is true doesn't unequivocally make it so. It would be nice to have monitoring data to backup this statement. Same is true for other pathways in Table 2. Are these uncertainties things that the public and potential receptors live with?

do you want
monitoring data
? for

I think that leachate might be a possible exposure route, the rationale for selection being under a hypothetical worst-case scenario, unforeseen events (e.g., malfunction, destruction of collection system) may cause exposure to leachate.

In Table 6 footnote (6), (N) states that screening toxicity value is based on a target hazard quotient of 1 for non-cancer health effects. This should be changed to hazard quotient of 0.1. This is so because of additive effects for several non-carcinogens, just as 1×10^{-6} is used for screening carcinogens due to additive effects. RAIS also uses these values for screening purposes i.e., PRGs.

In Table 8 trichloroethylene should be included in view of the fact that TCE toxicity values have changed (more toxic) and are currently being finalized.

If you have any questions regarding the above, please contact me at (312) 886-7573.

Further
explain

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

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0.1 ppb / TCE

- 3 -

conditions

CAPC

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Are these uncertainties things that the public and potential receptors live with?

I think that leachate might be a possible exposure route, the rationale for selection being under a hypothetical worst-case scenario, unforeseen events (e.g., malfunction, destruction of collection system) may cause exposure to leachate.

In Table 6 footnote (6), (N) states that screening toxicity value is based on a target hazard quotient of 1 for non-cancer health effects. This should be changed to hazard quotient of 0.1. This is so because of additive effects for several non-carcinogens, just as 1×10^{-6} is used for screening carcinogens due to additive effects. RAIS also uses these values for screening purposes i.e., PRGs.

In Table 8 trichloroethylene should be included in view of the fact that TCE toxicity values have changed (more toxic) and are currently being finalized.

If you have any questions regarding the above, please contact me at (312) 886-7573.

Table 8

HOD Risk Assessment Issues

for Recreational Uses

The revised risk assessment for the HOD Landfill site will be the basis upon which critical site reuse actions will be based. As such it is of utmost importance that the risk assessment be structured to provide adequate support for those actions. Specifically, the risk assessment must:

- Sufficiently communicate the sites safety for the recreational uses envisioned
- Support the removal of the fence surrounding the site
- Support the issuance of a Certificate of Availability for Reuse

General Comments

- Many of the following points are posed as questions rather than recommendations since these readers (Kristin and Mike) do not have significant knowledge associated with the risk assessment process and protocol.

Executive Summary

- The ES should start with a clear statement of the purpose (assessing risk for recreational uses) and whether the purpose was satisfied (it is or is not safe), and what assumptions made this possible.
- We need to add results to get a full picture of site safety; how far are we from completing all the analysis?

Section 1: Objectives and Background

- The following sentence, taken from page 1, describes the purpose: "The purpose of this exposure analysis and screening- level risk assessment was to assess potential human health and environmental exposures and risks associated with proposed future site uses under current (remediated) site conditions. This is intended to assist Waste Management of Illinois, Inc. (WMII), and the United States Environmental Protection Agency (USEPA) to determine if the proposed site uses are acceptable in terms of human health and environmental risk." This purpose is never addressed else where in the document, but would serve reuse and certification very well.
- You state that the risk evaluation relies on the 1994 baseline risk assessment; would it be possible to put in a couple of lines as to why the initial baseline risk assessment is still reflective of the site, and why its findings are reliable/transferable?

Section 2: Constituents of Potential Concern

- Vinyl chloride is listed as being a new contaminant of potential concern (COPC), and the report presents detected levels; since the levels are listed, can we state whether or not they exceed MCLs?
- The report does a good job of explaining why all of the COPCs were carried through; it just doesn't state how. For example, did it rely upon the samples taken in 1994, then apply the new standards, or did it use new samples and new standards?
- It is not clear if Vinyl Chloride was found just once or if it has been detected more than

once.

Section 3: Exposure Assessment

- How does not calculating dose rates from intake models affect this reuse assessment? Does it make it more or less viable? Why wasn't it done? Could this be explained in language that the average person would understand? What does "dose rates from intake models" mean?
- The statement, "The exposure assessment was based on the assumption that the existing site remedy would not be compromised by site redevelopment activities" is an important one; it should show up in the Executive Summary and Conclusions.
- Section 3.1 states that "Contact with groundwater or leachate was not expected under any of the proposed end uses." We should restate why groundwater is not an issue, and discuss why leachate isn't.
- Is there any scientific basis for proving that the various recreational user groups have the same exposure potential?
- If the risk assessment is being done for recreational users, does it assume the fence has been removed?
- When discussing the inhalation of airborne COPCs from the landfill, the report alludes to the 1994 baseline risk assessment that looked at "Exposure to fugitive LFG emissions... for nearby residents using modeled air concentrations for off-site locations." Will this be different for on-site users? If not, why?
- Section 3.2 discusses Ecological Exposures; is it possible that burrowing animals could impact the remedy? If so, how would this potentially affect exposure scenarios?

Section 4: Risk Characterization

- The case is made that a recreational user is the equivalent of a trespasser. We would like to address the following issues:
 - Are the exposure data stated on the top of page 9 the same exposure data as used in the previous risk assessment or are they just similar? Where do these numbers come from? Is there a set of standards?
 - Is there scientific evidence that a recreational user and trespasser will have similar exposures? A back of the envelope calculation would place a recreational soccer user at the site over 60 days a year, rather than the estimated 43 (18 weeks of soccer - 2 days a week for practice, one day a week for games). Also, the 1994 risk BLRA states that the soil ingestion is likely to be reduced for trespassers in the winter; for children playing under a recreational situation, might this be different?
 - Does equating a recreational user with a trespasser assume that the fence has been taken down? If so, we should state that, and the risk assessment will have proven that it is safe to take the fence down.
 - Surface water and creek sediment (both dermal contact and ingestion) are the pathways of exposure for trespassers/recreational users. Since the recreational uses would not involve playing in the creek, is this relevant? Can it be assumed that a trespasser going into the stream will suffer the same exposures as a recreational player outside the stream?

- The 1994 risk assessment discusses contaminated on-site surface soils as being a pathway of exposure (ingestion and dermal absorption), as were sediments and surface water. Why was it not included?
- The 1994 risk assessment states that on-site workers exposures will be less than trespassers. Should this be mentioned in the document to avoid worker concerns?

Section 5: Uncertainty Analysis

- It should be mentioned, if it is true, that there is uncertainty in equating trespassers with recreational users.
- The section is called "Uncertainty Analysis," but really, there is no analysis, just a bulleted list of variables that make the risk assessment uncertain.
- Should we state what variables have the largest potential to impact the results of the reuse assessment?

Section 6: Conclusions and Recommendations

- In the second paragraph, the report states, "An evaluation of alternative end uses and designs with respect to compatibility with the existing remedy and maintaining integrity of the existing remedy is recommended." This presents a bit of a chicken-egg issue. The stakeholders will need a risk assessment that states what the site can safely support before moving forward with more concrete plans.
- There is no mention of taking down the fence.
- The purpose, stated in Section 1 and highlighted in this recommendation, has not been satisfied or clearly addressed. The report should state, at the latest in the conclusions, that the remedy is protective of the proposed reuse. This will be invaluable in developing a certificate that certifies the property as available for reuse; EPA will rely on EPA documents to provide rationale for such certifications.

Tables

- I am a little confused by the statement on the cover sheet for the RAGS Part D planning tables; it states, "The Planning Table may not be altered... as appropriate to reflect site-specific conditions." Can they, or can they not be changed?
- When will the vinyl chloride information be provided? Is there any indication that it presents a risk?
- I thought the tables made more sense the way you had broken them down, but I am unfamiliar with the protocol.

respective toxicity factor to this total intake. Equations for calculating total hazard and risk from multiple routes of exposure are presented in TACO as equations R1 for carcinogens and R2 for noncarcinogens. Another acceptable procedure would be to use the lower of the available objectives.

Page 18/ Section 3.5: This section fails to answer the question of what additional risks will be experienced by ecological receptors due to the alternative final end use plan. In our view, the primary difference for ecological receptors between the BLRA and the final end use plan is the access of humans to the site. We expected in this section of the report to be an evaluation of the impact of humans on the ecology of the landfill site and the surrounding wetlands and creek.